

REMARKS

Claims 1-49 are all the claims pending in the application. Claims 1-10 are rejected. Claims 11-49 are withdrawn from consideration and have been cancelled from the present application. Claim 1 has been cancelled. Claim 2 has been placed into independent form and claims 5, 6 and 7 have been amended to correct their dependency. New dependent claims 50-60 have been added. Claims 50-55 correspond to the subject matter of claims 5-10. Claims 56-60 specify the background communication capabilities and structures to which the device is applicable.

Claim Objections

Claims 6-10 are objected to under 37 C.F.R. § 1.75(c) as being in improper multiple dependent form. The claims with improper multiple dependency have been amended to have single dependency and additional claims 50-55 have been added to capture the subject matter that is now omitted by the change from multiple to single dependency.

Claim Rejections - 35 U.S.C. § 102

Claims 1-5 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Minami et al (5,555,310). This rejection is traversed for at least the following reasons.

Claim 1

In framing the rejection of claim 1, which recites "a device for use in association with a multimedia system capable of capturing and/or reproducing at least audio signals at a multimedia workstation," the Examiner points to the teachings in Minami at col. 3, lines 58-64 and col. 6, lines 56-63 for support. However, a rejection for anticipation appears to be improper.

Basic Patent Law provides with respect to rejections under Section 102 that "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). In other words, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). (MPEP §2131).

In claim 1, the invention is defined expressly as related to use in association with “a multimedia system capable of capturing and/or reproducing at least audio signals at a multimedia workstation.” While Minami et al describes the illustrations in Figs. 9 and 10 (see col. 15, line 8) as a “multimedia terminal” having a display, there is no teaching that such terminal is a “workstation,” as taught in the specification and as claimed. Even though a mouse is illustrated in Fig. 10, this is no indication that the device is a workstation or is for use in a multimedia system. Thus, Applicants would submit that the rejection of claim 1, and all of the other claims dependent therefrom, is not stated on the proper statutory basis and, thus, is overcome.

Nonetheless, Applicant has cancelled claim 1 and has placed claim 2 into independent form in order to advance the prosecution of this application.

Claim 2

More importantly, as to claim 2, the claim specifically requires the device to be further configured to have a synthetic aperture microphone processing capabilities. Thus, claim 2 in independent form now specifies that the device has adaptive acoustic stereo echo canceling and a plurality of microphones with **synthetic aperture microphone processing capabilities**. These features clearly are not shown in Minami et al.

The Examiner points to Fig. 3 of Minami et al for a pertinent structure related to a stereo echo canceller that has reduced processing and is useable in a remote conference system and has a plurality of microphones 101R, 101L (col. 5, lines 45-52). The Examiner asserts that such device has synthetic aperture capabilities, as claimed. Applicants respectfully submit that nowhere in Minami et al is there a teaching of a synthetic aperture microphone capability, as claimed.

First, none of Figs. 3, 4, 7, 13 or 15 of Minami et al, which illustrate systems with plural microphones, illustrates a synthetic aperture microphone, and nowhere in the related disclosure in the specification is there any mention of a “synthetic aperture” microphone. This is not surprising, since the disclosed structure is not a synthetic aperture microphone. As described subsequently, the text and figures of Minami et al are directed to stereo signal echo cancellers and are concerned with creating a control signal responsive to the location of an acoustic sound

source as implied by examining comparative attributes of the signals produced by a plurality of microphones.

Second, the synthetic aperture microphone system that is claimed has unique properties that enable it to act like an acoustic version of a phased array receiving antenna. As such, in fact, the system has no relation to an echo canceller. The phased array receiving antenna has multiple inputs and one output signal, and creates a “hot spot” for sensitive capture of a signal - in this case, sound, as well as side lobes having reduced pick-up sensitivity at adjacent locations. Nothing of the sort is found in Minami et al, or any other prior art reference in the video conference/collaboration field.

In particular, the synthetic aperture microphone system provides the capability of selectively capturing the voice of a speaking user, while filtering out adjacent noise. In effect, it can zoom in on a speaking user to capture the desired audio signals, just as a video camera can zoom in on a desired image. That capability to capture speech with high quality is extremely important alone, but also offers additional value when used in implementing a stand alone auxiliary device that adds multimedia capability to a workstation.

The Examiner is respectfully referred to the system as illustrated in Figs. 10-12 of the present application, where a primary hot spot is established around the speaking user by use of a synthetic aperture microphone arrangement that provides high fidelity for the speaker’s audio input while eliminating sound from a surrounding rejection region. The adaptive acoustic stereo echo canceling apparatus, of the type illustrated in Figs. 8 and 9, compliments the synthetic aperture microphone system and ensures clear capture of the speaking user’s audio at the associated microphone. However, it should be noted that the echo canceller is not a part of or essential to the synthetic aperture speaker.

Third, the Examiner’s reference to Col. 5, lines 45-52 is unavailing as to the disclosure of synthetic aperture microphone capabilities. The output of the claimed invention is an audio signal, while the output of the Minami et al system is a control signal (specifically, the “localization control” information) that is determined from microphone signal comparisons and used remotely for the reproduced sound field positioning with respect to the location of an image displayed on an associated display screen. The Minami et al microphone system provides

localization detection, i.e., in determining where sound is coming from. In the case of the present invention, the operation is intended to simulate physical sound response pattern environment structures, such as baffles, etc. and produce a thus-simulated audio signal, and not a location-responsive control signal, as in Minami et al.

In short, the invention of claim 2 is directed to synthesizing a physical microphone sensitivity pick-up pattern and producing an audio output signal (with no control output), while in contrast, Minami et al produces a control output signal responsive to the position of a sound source.

Claim 3

With regard to claim 3, which requires the adaptive stereo echo-canceling capabilities and synthetic microphone processing capabilities to be combined in a single package, the disclosure of Minami does not teach such structure. The invention of claim 3 is focused on a multi-multimedia collaboration device that is a stand-alone piece of equipment, i.e. a device “for use in connection with a multimedia system.” The device may be connected to and especially used with existing “legacy” workstations of limited power in a networked environment. The device that contains specified structures has a separate housing and can be attached to existing equipment having no or limited multimedia capability, in order to provide desired multimedia capabilities, without the need to replace existing workstations with multimedia workstations having embedded capability. This is a discrete and integrated auxiliary or “side-kick” device having at least one microphone and acoustic stereo echo-canceling capabilities, thereby providing significant operational and economical value.

The Examiner asserts that such device is “inherent” in being combined in a single packaging. However, there is no teaching or suggestion that the device should be anywhere but integrated into a device. The law of inherency requires that there be no other alternative, and clearly, there are alternatives other than a separate structure in a separate package. Thus, in the absence of a reference showing such structure, involving the combination of elements as recited in the claims, this claim cannot be anticipated.

Claim 4

As to claim 4, the claim cannot be anticipated for the reasons given with respect to claims 1 and 2, as Minami et al does not concern multimedia systems, multimedia work stations or, in particular, synthetic aperture microphone capabilities.

Claim 5

Claim 5 depends from claim 2 and further specifies that the synthetic aperture microphone processing capabilities include the capability to adjust a position of a spatial region corresponding to the area of maximum sensitivity of the synthetic aperture microphone function. The Examiner points to col. 21, lines 28-65 of Minami et al for such teaching. First, the cited text are portions of claims in Minami et al and not a teaching of such capability, though they do refer to sound image “localization” and generating a new estimated synthetic echo path when an image on a screen “changes position. “ Second, any adjustment in Minami et al with respect to location is not related to the change in acoustic properties. As already explained with regard to claim 2, Minami et al’s localization detection is for purposes of control, i.e., for determining where sound is coming from, rather than to simulate physical sound control structures, such as baffles, etc. in an actual audio simulation.

Claims 6-10 and 50-60

These claims would be patentable, based on their dependence on allowable parent claims as already discussed. Moreover, these claims introduce the further multimedia capability of video capture and display, and in particular, specify the use of video digital streams that provide a further basis for multimedia system applications that are distinguishable from the teachings of Minami et al. In addition, the new claims specify the communications capability and structure to which the device is applicable, namely means for supporting analog and digital networks for both analog and digital audio and video networks, including audio reception capabilities and video reception capabilities for primary and auxiliary streams.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Amendment Under 37 C.F.R. § 1.111
U.S. Application No. 09/601,384

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

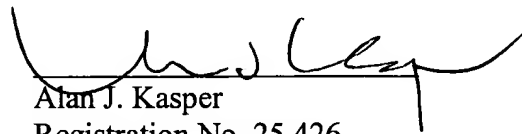
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